

REMARKS

In response to the Office Action mailed December 19, 2006, the Examiner rejected claims 3, 5, 8, 12, 17, 19, 27, 29, 31, 39, 41, 44, 48, 53, and 55 under 35 USC § 112, second paragraph; rejected claims 1-7, 9-14, 16-30, 32-43, 45-50, and 52-60 under 35 U.S.C. §102(e) as anticipated by U.S. Application Publication No. 2004/0243560 to Broder et al. (Broder); and rejected claims 8, 15, 31, 44, and 51 under 35 U.S.C. §103(a) as unpatentable over Broder in view of U.S. Patent No. 5,838,950 to Young et al. (Young).

By this Amendment, Applicant amends claims 1, 3-6, 8, 15, 17-20, 25, 27-31, 37, 39-42, 44, 51, and 53-56 to more clearly define the features of the present invention and cancels claims 7 and 43.

Claims 1-6, 8-42, and 44-60 are currently pending.

Rejection under 35 U.S.C. §112

Regarding claims 8, 31, and 41, Applicant submits that the amended claims obviate the Examiner's rejection since claim 8 now recites "x is selected from a first range of 256 to 512 and y is selected from a second range of 128 to 256, wherein y is not selected to have the same value as x." As a consequence, if x is selected to have the value of 256, y cannot have that same value 256. Similar amendments have been made to claims 31 and 44. Regarding claims 7 and 43, those claims have been canceled. Accordingly, the rejection under 35 U.S.C. §112, second paragraph, should be withdrawn.

Rejection under 35 U.S.C. §102(e)

The Examiner rejected claims 1-7, 9-14, 16-30, 32-43, 45-50, and 52-60 under 35 U.S.C. §102(e) as anticipated by Broder. Applicant respectfully traverses this rejection.

Claim 1, as amended, recites "determining a first value x representative of a first location of a first skip entry in an inverted index such that x is determined as an integer corresponding to a quantity of documents including at least a majority of the index terms." Moreover, claim 1, as amended, recites "determining a second value y, where y does not exceed x, the second value y determined as an integer and representative of a second location of a second skip entry in the inverted index." The determined first value x and second value y are used when "generating the inverted index for the collection of documents, the inverted index including an inverted list for each of the index terms, each inverted list including at least one posting and, if the number of postings exceeds x, further including the skip entry after the xth posting and one or more second skip entries thereafter at intervals of every yth posting," as recited in claim 1.

At the outset, Applicant points out that Broder does not disclose an inverted index using skip values much less an approach that inserts a first skip entry based on the determined first value x and subsequent skip entries based on the determined second value y, as recited in claim 1. Indeed, nowhere does Broder even use the term "skip entry." Rather than a skip entry, Broder uses a basic iterator 1125 object for jumping to a given entry in the index. (Broder, para. 0045, lines 4-7). However, that given entry is merely a document entry rather than a special type of entry like the skip entry.

In the Office Action, the Examiner alleges that Broder at paragraph 045, lines 10-12 discloses inserting skip entries. However, a careful reading of paragraph 045 shows that Broder describes "next(id)" which apparently is a procedure for jumping to the first posting element with a document identifier greater than or equal to the "id." If there is no such document, Broder uses a special "LastID" to indicate the end of the documents has been reached. Specifically, Broder states:

In particular, it provides a method next(id) that returns the first posting element for which DID \geq id. If there is no such document, the term iterator 1125 returns a special posting element with an identifier LastID that is larger than all existing DIDs in the index.

Broder, para. 0245, lines 8-12. Neither the "next(id)" nor the "LastID" constitute a skip entry.

Because Broder's "basic iterator 1125 object" approach does not constitute an inverted index including skip entries and inserting a first skip entry into the inverted index based on the determined first value x and inserting subsequent skip entries based on the determined second value y, Broder fails to disclose at least the following features of claim 1: "determining a first value x representative of a first location of a first skip entry in an inverted index such that x is determined as an integer corresponding to a quantity of documents including at least a majority of the index terms" and "determining a second value y, where y does not exceed x, the second value y determined as an integer and representative of a second location of a second skip entry in the inverted index." Therefore, claim 1 and claims 2-6 and 9-14, at least by reason of their dependency from independent claim 1, are not anticipated by Broder, and the rejection of those claims under 35 U.S.C. §102(e) should be withdrawn.

Moreover, since Broder fails to disclose or suggest the above-noted “determining” features, Broder also necessarily fails to disclose the “generating” feature recited in claim 1, since it recites “generating the inverted index for the collection of documents, the inverted index including an inverted list for each of the index terms, each inverted list including at least one posting and, if the number of postings exceeds x, further including the first skip entry after the x^{th} posting and one or more second skip entries thereafter at intervals of every y^{th} posting.” Therefore, claim 1 and claims 2-6 and 9-14, at least by reason of their dependency from independent claim 1, are not anticipated by Broder, and the rejection of those claims under 35 U.S.C. §102(e) should be withdrawn for this additional reason.

Claims 15, 37, and 51, although of different scope, includes features that are similar to those noted above for claim 1. Claims 16-24 depend from independent claim 15. Claims 38-42 and 44-50 depend from independent claim 37. Claims 52-60 depend from claim 51. For at least the reasons given above with respect to claim 1, claims 16-24, 37-42, 45-50, and 52-60 are not anticipated by Broder, and the rejection of those claims under 35 U.S.C. §102(e) should be withdrawn.

Claim 25 recites a combination of features including “one or more inverted lists including a quantity of postings that exceeds a value x, a skip entry after the x^{th} posting, and one or more additional skip entries thereafter at intervals of every y^{th} posting, where the value x is determined as an integer corresponding to a quantity of documents including at least a majority of the index terms, and the value y is determined as an integer and does not exceed the value x.” For at least the reasons given above with respect to claim 1, Broder does not disclose this feature, and thus claim 25 and claims

26-30 as well as 32-36, at least by reason of their dependency from independent claim 25, are not anticipated by Broder. Therefore, the rejection of those claims under 35 U.S.C. §102(e) should be withdrawn.

Rejection under 35 U.S.C. §103(a)

The Examiner rejected claims 8, 15, 31, 44, and 51 under 35 U.S.C. §103(a) as unpatentable over Broder in view of Young.¹ Applicant respectfully traverses this rejection.

Claim 8 depends from claim 1 and includes all the features therein including, among other things, "determining a first value x representative of a first location of a first skip entry in an inverted index, such that x is determined as an integer corresponding to a quantity of documents including at least a majority of the index terms" and "determining a second value y, where y does not exceed x, the second value y determined as an integer and representative of a second location of a second skip entry in the inverted index." As noted above with respect to claim 1, Broder fails to disclose at least these features. Although Young discloses an adapter integrated circuit, Young fails to cure the noted deficiencies of Broder. Accordingly, neither Broder nor Young, whether taken along or in combination, discloses or suggests these features, and thus the rejection of claim 8, under 35 U.S.C. §103(a) should be withdrawn.

Claims 15, 31, and 51, although of different scope, include features similar to those noted above with respect to claim 8. For at least the reasons given above with

¹ Claim 44 was canceled.

respect to claim 8, the rejection under 35 U.S.C. § 103(a) of claims 15, 31, and 51 should be withdrawn.

Regarding the motivation to combine, Applicant disagrees with the Examiner's alleged motivation to combine because a skilled artisan would not combine Young, which address the problems of host-adapter systems (e.g., SCSI), with Broder, which addresses the problems associated with searching. Moreover, the Examiner at page 21 of the Office Action cites to Young at col. 4, lines 1-5 and 38-43, but that passage relates to aspects of integrated circuits, such as buses, memory, and the like. Nowhere does that passage even mention searching or inverted indexes. As a consequence, Applicant submits that Young at col. 4, lines 1-5 and 38-43 cannot possibly provide any motivation to combine as alleged by the Examiner. For this additional reason, the rejection of claims 8, 15, 31, and 51 under 35 U.S.C. §103(a) should be withdrawn.

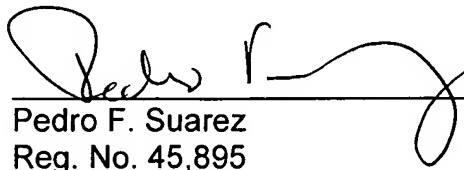
CONCLUSION

It is believed that all of the pending claims have been addressed in this paper. However, failure to address a specific rejection, issue or comment, does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above are not intended to be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this paper should be construed as an intent to concede any issue with regard to any claim, except as specifically stated in this paper, and the amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

If there are any questions regarding these amendments and remarks, the Examiner is encouraged to contact the undersigned at the telephone number provided below. No fee is believed to be due, however, the Commissioner is hereby authorized to charge any fees that may be due, or credit any overpayment of same, to Deposit Account No. 50-0311, Reference No. 34874-165-UTL / 2003P00147US.

Respectfully submitted,

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Pedro F. Suarez
Reg. No. 45,895

Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C.
9255 Towne Centre Drive, Suite 600
San Diego, CA 92121
Customer No. 64280
Tel.: 858/320-3040
Fax: 858/320-3001